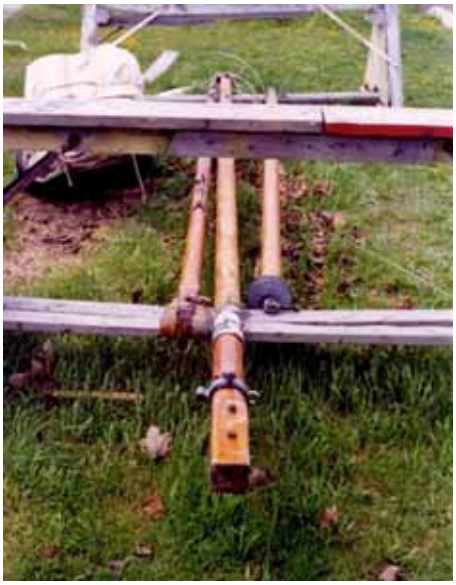
Rebuilding The Mast of a Gunter-rigged Westerly 22

When I purchased our1964 Westerly 22 it was in need of considerable cleaning and general restoration. Although little major was wrong with the hull itself everything was in need of a general repair and restoration.

In this short piece I will outline the condition of the spars and what I have done to return them to good condition. I would note that this is how I have approached the problem and it has produced good results for me.

When we found our boat it was early in the year and the current owners had left the spars out in the open over the winter. By the look of them at the time I reckoned that they probably had done a couple of winters outside over and above a general lack of maintenance in recent years.



The varnish was very poor or absent, the jaws on the gunter boom were broken and the remaining ends were worn stubbs. They had been replaced by an interesting combination of plastic drainage pipe and light metal strapping (note image at left) that was supposed to slide up and down the mast. The wire that ran along the Gunter spar for raising it and sliding the it into position was sound but the spar itself at the attachment points was very cut up and damaged the through bolts were severely bent inside the spar and the outer end was held together with an expansion clamp (note left). The main boom was lacking in finish and the sail slot was split and broken at the foot. The metal fittings were all in very good condition and the roller furler was rust free and well greased. The mast itself was structurally sound albeit with several large areas of glue failure along the seams. The Resorcinol glue would have been nigh 40 years old at that point, so given the level of care I would say it had proven itself. I chose to replace it with epoxy as I am more familiar with this type of glue and its gape filling qualities are more forgiving of small gaps and imperfections.

The first thing I did once the boat was home was to go over them minutely in search of rot. There was none at all. The wood was sound. I also noted that the main mast was quite light and realized it was hollow. This worried me some as with the gaping seams I was concerned that moisture might have gotten inside and caused problems.

I then took them down to a local boat builder I was acquainted with and sought his advice. He was appalled at their condition and suggested that they would make good firewood and he could build me a new mast for about $2000.00. I was appalled at the suggestion and my stubborn streak

kicked in and I decided to fix them myself. A few weeks later a marine surveyor stopped by and had a look and suggested I should trash the whole project and get something that would be resaleable. I decided that this was a project that might take longer than I had planned, but I was still 'good to go'. That was the start of my 2year project 7 years ago and its got another year to go.

I moved the spars into our basement and set them up on a solidly built bench I made for the purpose. It was constructed of 2x6 beams all very carefully aligned and leveled.

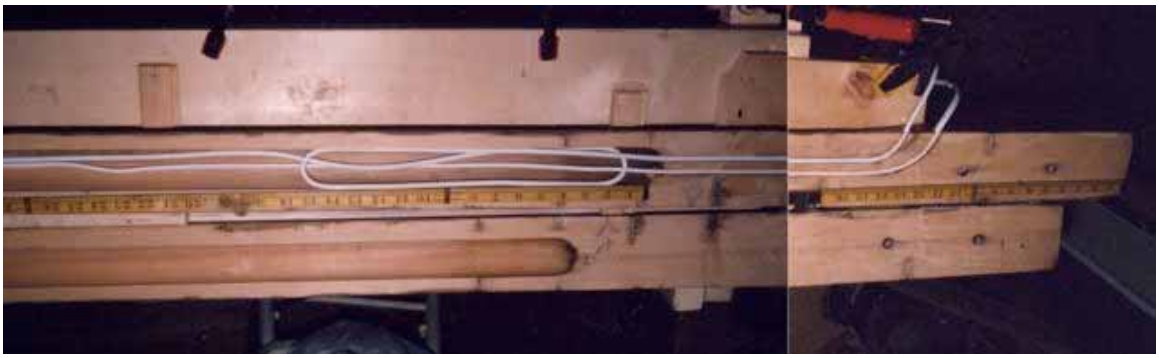
The Mast

I decided to tackle the mast first as it was most in need of repair. I laid it out on the bench and tried to cut the seams with an old hacksaw blade but I found it a bit too thick and for me, difficult to control. I replaced it with my folding Dozuki saw with its very fine sharp blade. With it, I was able to slowly cut along the remaining seams where the old glue was still holding. Resorcinol is dark in colour so I was able to keep a better eye on my progress. Much of the seam glue simply crumbled on contact with the saw but a fair bit held true and at a couple of points the saw diverged from its proper path and I had to stop and reset the cut. These small slices were very thin as a result of the fine kerf of the Japanese saw so they were easily repaired. One is visible on the finished mast when I point it out.

Once done, I laid the 2 halves side by side ("side by each" if you are a maritimer from Newfoundland) and found the interior was as clean and fresh as when it was new except for those areas where the glue had failed. In these areas the wood was simply badly stained.

As I was working in our basement and the relative humidity had a habit of shifting a fair bit I clamped the 2 halves down tightly to the bench to help prevent twist. This turned out to be a good decision in the end.

I then sanded out all the old glue and cleaned the surfaces for re-gluing. I then decided that I would feed wire for a steaming light and the VHF radio antennae up the interior. The antennae coaxial cable had been previously attached to the aft starboard shroud with duct tape. To complete this I needed to router space through the solid spacers in the mast and to provide secure and well sealed egress past the mast sheave. I also needed to make sure that where the wire exited the mast that it limited risk for humidity to enter.



This picture shows the lower section of the mast with the wires in place. The large loop is in the coaxial cable. I also placed a smaller loop in the electrical cable. The purpose for this was so that if

needed, I would have extra wire available whenever an end fitting was needed to be replaced, or if wire was damaged. I really did not want to split the mast a second time. I also angled downward the router cuts where the wires exited the mast. Note also that all the routering was just large enough for the wires to be able to slide and that only the starboard side of the mast was routered.

This shows the mid section with the smaller loop visible in the electrical cable.

This shows the upper section of the mast and how the wires were passed through the sheave area and then led out of the mast. Note also that I put loops at this end as well for the same reasons as in the lower section. With the wires bonded at the sheave this allowed access to pull out extra wire to repair fittings. In the photo its not so clear, but there is a distinct downward turn where the VHF cable leaves the mast. The wire for the steaming light is clearer. Where the wires passed by the sheave they were bonded in place with a flexible sealant. The wood was sealed with epoxy before they were laid in place.

Once this was all complete I made a light paste of epoxy resin with the sawdust from my work on the mast and covered both halves. I then laid one on the other aligned them with a string and clamped them together with a supporting beam to ensure there was no slippage or twisting.

Once the mast was re-glued and cured I then set about sanding and finishing the exterior. The new glue seams needed a fair bit of work as I am a bit generous with glue and a there was more than I wished to clean up. The light paste approach worked well as it filled the minor flaws in the cut areas.

I sanded off all the old finish. It was in very poor condition and came off quite easily. I do not care for strippers unless they are the only good option. Much of the sanding in the end was to clean off water staining which was not entirely successful. I accepted some residual staining as I also tried to not sand off all the old patina.

The mast was then hung on the ceiling to await spring's arrival, which in this part of the world sometimes seems to be in June.

The Boom

The primary problem with the main boom was the damage to the sail groove at the foot. It was split back about 8" (20cm) and had other areas along that were gouged or cracking as well. The foot and the few other most serious spots were cut away altogether and I replaced the damaged material with spruce epoxied into place. The foot I replaced with a piece of Ash I had as I felt that a

tough piece of hardwood would protect this area in future. I made sure that the internal shape of the replacement bits matched seamlessly the original groove before I glued them all in place. The glue seam was in good condition so I left it alone.

The foot of the boom was damaged and where the fitting to tie the sail was screwed in there was a fair bit of checking and splitting and old holes from previous screws. These I patched with epoxy paste using the sawdust from the repairs.

The roller furling is very simple and functional and is attached to the mast with its shaft slotted down a hole in the forward end of boom. All that was needed was to pull it free and clear away the grease and sand the wood.

I then sanded and cleaned the boom as with the mast and stored it on the ceiling.

The Gunter spar

The Gunter boom is a solid piece and the only real damage to it was where the slide wire was attached. These end points were quite gouged out. As well, the through bolts had bent and worn loose open oval shaped holes into the wood.

The gouge damage I simply carved out and replaced with epoxy paste made from the sawdust. I did it this way for 2 reasons. The first is that it was the easiest and most solid approach. It's quite visible but I had decided to construct a brass or copper plate over the area to act as protection for the wood when the wire and saddle were re-installed. I also reckoned it would provide end security for the new through bolts and stabilize them.

I then drilled out the old through bolt holes to 5/8" diameter and glued in 2 pieces of hardwood dowel through the spar. I then re-drilled the holes through the dowel. I may increase the diameter of the holes and push in a tight metal sleeve that will further secure the bolts.

The small splits in the outer tip I simply cleaned and filled with a thin epoxy then clamped the end tightly. It came out well and is now smooth with only the fine crack lines visible but well glued. You will note in the image on the first page the end held together with an expansion clamp.

The spar then joined its fellows on the ceiling

The Jaws

The jaws were a mess (Note picture at beginning). I spent a fair bit of chasing on the Internet worrying over size shape construction etc. I even considered replacing them with metal ones I found at Classic Marine in the UK. In the end I decided to rebuild them with some oak I had on hand. I cut and shaped new sides and then glued them to the original remaining stumps. Once they were properly shaped I glassed and epoxied a couple of layers onto each to provide strength and stability. The plan is to leather the insides before I put it aboard. I have not yet remade the small wedge that slots down between the jaws and the mast. I am considering putting a small roller at this point instead. I will also secure the jaws to the mast with parrel beads.

  
Here are the jaws ready to be assembled on the boom. If they break again I will replace them with a set of metal Gunter jaws that will allow for twist, which I believe is the primary reason for breakage.

Finishing
When spring arrived, I took all the spars outside and did a final sanding with 200grit. I then finished the surfaces with about 6 coats of Deks Olje oil finish. I chose to use this as I wanted a matt finish and I also wanted to be able to simply rub down and refinish with a minimum of effort each spring.

After the oil was applied and fully dried I pumped caulking into the holes where the wires exited the mast. This will keep the holes well sealed but allow me to pull out a bit of wire at a later date if needed.

Rigging and fittings will be assembled this year when I re-do the shrouds.

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